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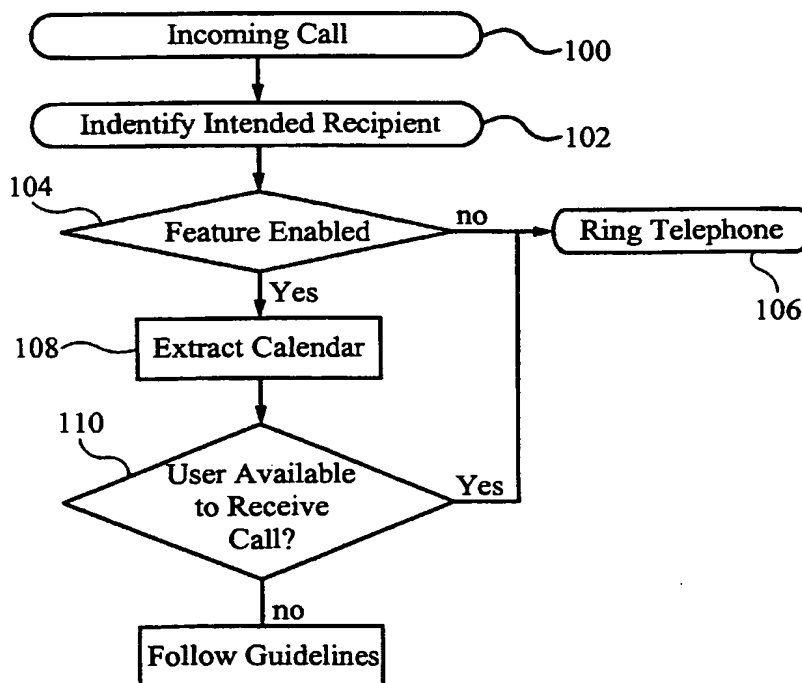
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(54) Title: **INTEGRATION OF DIGITAL CALENDAR DATA WITH VOICE APPLICATION**



(57) Abstract: A telephone call and voice processing system is utilized for receiving telephone calls for an intended recipient via a voice-over IP telephone network. A voice server in conjunction with a telephony voice application identifies the intended recipient and accesses digital calendar information for the intended recipient as well as guidelines and rules for call handling that are established by that intended recipient. The call is then handled based upon the calendar data, guidelines and rules. The user can establish guidelines to handle different classes of users or different specific users in different ways. Additionally, the voice server can be controlled to connect the user at remote telephone numbers, such as at the location of a meeting, on the user's cellular telephone, at home, on a beeper. The user's calendar can be modified to record telephone activity. Upon identifying that a user is engaged in a telephone call,

either incoming or outgoing, the voice server can identify the other party and record the call and duration in the user's calendar database. The other party can be identified by their telephone using conventional caller ID technology. Where the other party's telephone number is in the user's contact database, the name of the other party can be associated with the calendar information.

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**INTEGRATION OF DIGITAL CALENDAR DATA WITH VOICE APPLICATION****Field of the Invention:**

This invention relates to field of voice communication. More particularly, this invention relates to a method of an apparatus for integrating data in a scheduling calendar for use in voice applications.

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**Background of the Invention:**

In the conventional mode of doing business all persons have a desktop telephone. In addition, many persons also have and carry a cellular telephone for communicating when away from their desk or office. When a user is unable to take a call the caller is handled in one of several conventional ways. For example, a human operator or receptionist takes a message for the caller. In the alternative, the caller leaves a message on an answering machine or voice mail system.

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With the advent of automated schedulers and calendaring systems users are creating databases of events to which they must attend such as meetings, appointments, telephone calls, trips and the like. Examples of systems that provide users with such capabilities include a hosted calendar or individual digital calendar including for example Microsoft Outlook, PalmPilot, and Day-Timer Organizer 2000 among other commercially available programs.

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**Summary of the Invention:**

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A telephone call and voice processing system is utilized for receiving telephone calls for an intended recipient via a voice-over IP telephone network. A voice server in conjunction with a telephony voice application identifies the intended recipient and accesses digital calendar information for the intended recipient as well as guidelines and rules for call handling that are established by that intended recipient. The call is then handled based upon the calendar data, guidelines and rules.

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The user can establish guidelines to handle different classes of users or different

specific users in different ways. Additionally, the voice server can be controlled to connect to voice mail, to a human attendant, or to the user at remote telephone numbers, such as at the location of a meeting, on the user's cellular telephone, at home, on a beeper.

The user's calendar can be modified to record telephone activity. Upon identifying  
5 that a user is engaged in a telephone call, either incoming or outgoing, the voice server can identify the other party and record the call and duration in the user's calendar database. The other party can be identified by their telephone using conventional caller ID technology. Where the other party's telephone number is in the user's contact database, the name of the other party can be associated with the calendar information.

#### Brief Description of the Drawings:

Figure 1 is a block diagram of a system for implementing the present invention.

Figure 2 is a program flow diagram for the preferred method.

#### Detailed Description of the Preferred Embodiment:

Figure 1 shows a block diagram of a system implementing the preferred embodiment of the present invention. An automated calendaring/scheduling program 10 is provided. The calendaring/scheduling program 10 can be any commercially available  
20 calendaring/scheduling program include a hosted calendar or individual digital calendar including for example Microsoft Outlook, PalmPilot, and Day-Timer Organizer 2000 or any other commercially available or proprietary scheduling program. The calendaring/scheduling program 10 is coupled to provide access from the television/scheduling program to other digital systems.

A special purpose voice server 12 is configured to develop the operations to of the  
25 present invention. The voice server 12 can be a conventionally configured commercially available computer such as a so-called IBM clone personal computer, an Apple Macintosh, but is preferably a Solaris from Sun Microsystems. The voice server 12 can be located in any place which has access to the Internet. For example, the voice server 12 can be positioned at

a user's work place, at an Internet service provider (ISP), or at a telephone company central office. A telephony voice application 14 is configured for operation on the voice server 12.

The voice server 12 is preferably a voice-over-IP (VOIP) server for performing digital telephony operations. As such, the voice server 12 can receive calls directly from a VOIP  
5 telephone 20 or from a VOIP telephone 24 via the Internet cloud 22. In addition, the voice server 12 is configured to receive calls from a conventional telephone 16 via the public switch telephone network (PSTN) 18.

On receiving an incoming telephone call for a subscriber of the voice server 12 from a conventional telephone 16, from a VOIP telephone 20 or from the Internet the voice server in  
10 combination with the telephony voice application 14 ascertains whether the intended recipient is available. To determine the availability of the intended recipient, the telephony voice application 14 queries the scheduling/calendaring program 10. If the intended recipient has no events scheduled at the time, the incoming call the voice server 12 presumes the intended  
15 recipient is available and rings their telephone 26. On the other hand, if the intended recipient has scheduled an event or prescribed a set of rules to govern this period of time, the voice server 12 will act accordingly. For example, the voice server 12 can connect the caller to the intended recipient's voice mail, human assistant, pager or cellular phone or the voice  
server 10 can provide a busy signal, even though the intended recipient's telephone is not actually in use.

20 In addition to these functions, the user can establish a set of priority criteria. For example, the user can establish that a particular meeting or event has a particular predefined level of importance. Similarly, the user can establish a particular incoming caller (based upon caller ID) has a particular predefined level of caller importance. When caller calls who has a higher level of priority than a scheduled event, the user can establish that the voice server 12  
25 will interrupt the intended recipient at the office telephone or at a preset telephone number, cellular telephone or according to other pre-programmed criteria.

Such criteria can include further integration of contact information data. For example, a user might have a database of contact information including name, telephone number,

address, and the like. Upon entering into the calendar database in with a known person in voice server 12 can be configured to automatically know the telephone number where the meeting will be held. Depending upon the established criteria, by simply entering a meeting with that known person into the calendar can cause the voice server 12 to automatically forward the intended recipient's calls to telephone number of the known person. In such a circumstance, the user need not enter a forwarding telephone number such as conventionally required for telephone forwarding operations available commercially.

The digital calendar data can be stored on the system on which the scheduling/calendaring program 10 is resident. When the calendar data is stored with the scheduling/calendaring program 10 the throughput of the voice server 12 is delayed by having to first access the calendar data. In the alternative, the data is preferably stored in the telephony voice application 14 in the voice server 12. By storing the calendar data on the voice server 12 the system and respond quickly to incoming calls.

The data can be stored as either text or voice data. The data can be either stored in the scheduling/calendar program 10 or in the voice application in the voice server 12. If text is stored, that data will be displayed on a text display at the caller's location. If voice data is stored, that speech will be played in the telephone instrument and to the user.

It will be apparent to one of ordinary skill in the art that commercially available scheduling/calendaring programs must be modified in order to accommodate the features of this invention. In particular, such scheduling/calendaring programs must include an ability to export calendar data to voice server 12 for use in the telephony voice application 14.

Incoming call processing is handled according to calendar data and also according to a set of preprogrammed guidelines or rules. The guidelines or rules can include such criteria as:

If it's before 8:00 a.m. ring my home telephone.

If it's between 8 a.m. and 11:40 a.m. ring my desk telephone.

If it's between 11:40 a.m. and 1:30 p.m. ring my beeper.

If it's between 1:30 p.m. and 5:45 p.m. ring my desk.

If it's between 5:45 p.m. and 7:15 p.m. ring my cellular telephone.

If it's between 7:15 p.m. and 9:30 p.m. ring my home telephone.

If it's after 9:30 p.m. go to voice mail.

If it's Saturday ring my beeper.

5 If it's Sunday go to voice mail

In addition, calls can be handled according to the nature or identity of the caller. In a company, the intended recipient might handle calls from within the company differently than outside calls. Further, the user might program certain important family or customer numbers as having a high priority and certain sales calls as having a low priority.

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Many VOIP telephones include a small alphanumeric display. For callers having a telephone service comparable to that disclosed in the present invention, it is possible to display the intended recipient's calendar information to that caller. For example, the secretary calling his boss could learn that his boss is in a meeting and know how long the meeting is supposed to last. Other callers using VOIP technology can have the call information displayed on the computer desktop. Users with this technology can also learn the information found in the intended recipient's calendar data. Of course, the intended recipient can choose to block callers from seeing their calendar information. It will be whether understood to those of ordinary skill in the art that two or more voice server 12 devices can be interconnected via the Internet or a hard wire to achieve the results described above for larger number of users.

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The system described above is also capable of "reverse integration." In other words, as the user accepts calls provided by the voice server 12 the user's scheduling/calendaring program 10 can be modified to show those calls and the numbers from which or to which the calls were made. When the user's contact database includes the telephone number and name of one of those callers, the calendar data can be made to show that persons' name. Such a system is particularly important persons that provide a service and charge for their time such as consultants and attorneys.

25

Figure 2 shows a program flow diagram for incoming call according to the present invention. An incoming call is received by the voice server 12 (Figure 1) in step 100. Based upon the telephone number called the voice server 12 identifies the intended recipient in step 102. Thereafter, in the step 104 the voice server 12 determines whether the features of the present invention are enabled for the intended recipient. If the features are not enabled then the voice server 12 operates to win the intended recipient's telephone in step 106. If the features are active, the voice server 12 and the telephony voice application 14 extract the intended recipient's calendar data as described above in the step 108. If the calendar data reveals that the intended recipient is available to receive the call in the step 110 then the voice server 12 rings intended recipient's telephone in the step 106. Otherwise, the voice server 12 acquires the guidelines and rules for handling the call and follows one of the steps outlined above.

This invention has been described in terms of specific embodiment is incorporating details to facilitate the understanding of the principles of construction and operation of the invention. Such reference herein to specific embodiment and the details thereof is not intended to limit the scope of the claims and hereto. It will be apparent to those of ordinary skill in the art that modifications can be made in the embodiment chosen for illustration without departing from the spirit and scope of the invention. Specifically, it will be apparent to one of ordinary skill in the art device of the present invention could be implemented in several different ways and the apparatus disclosed above is only illustrative of the before embodiment invention and is in no way limitation.



**CLAIMS**

What is claimed is:

1       1.       A telephone call handling system comprising:

- 2           a.       means for receiving an incoming call for an intended recipient;
- 3           b.       means for identifying an identity of the intended recipient;
- 4           c.       means for accessing calendar data for the intended recipient; and
- 5           d.       means for determining whether the intended recipient is available to receive a
- 6           call.

1       2.       The telephone call handling system according to claim 1 further comprising means for

2       ringing a telephone of the intended recipient if available or for handling the call in a different

3       manner if not available.

1       3.       The telephone call handling system according to claim 2 wherein the different manner

2       is selected from the group consisting of connecting a caller to a voice mail system for the

3       intended recipient, connecting the caller to a human assistant, connecting the caller to a pager,

4       connecting the caller to a cellular phone or providing a busy signal, even though the intended

5       recipient's telephone is not actually in use.

1       4.       A call handling system for a user, the system comprising:

- 2           a.       means for identifying a telephone number for an other party to a telephone call;
- 3           b.       means for accessing a digital calendar database for the user; and
- 4           c.       means for modifying the digital calendar database to identify the telephone
- 5           number as well as the telephone call and its duration.
- 6

1 5. The call handling system according to claim 4 further comprising means for accessing  
2 a database of contact information for the user and modifying the digital calendar database to  
3 identify the other party by name.

1 6. A method of handling a telephone call comprising the steps of:  
2 a. receiving an incoming call for an intended recipient;  
3 b. identifying an identity of the intended recipient;  
4 c. accessing calendar data for the intended recipient; and  
5 d. determining whether the intended recipient is available to receive a call.

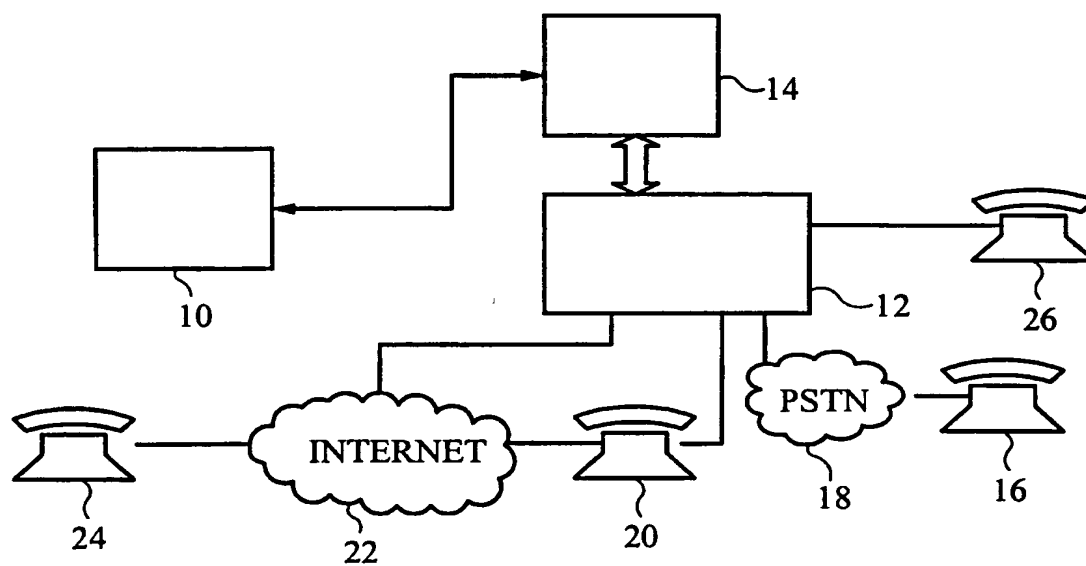
1 7. The method according to claim 6 further comprising the step of ringing a telephone of  
2 the intended recipient if available or for handling the call in a different manner if not  
3 available.

1 8. The method according to claim 7 wherein the different manner is selected from the  
2 group consisting of connecting a caller to a voice mail system for the intended recipient,  
3 connecting the caller to a human assistant, connecting the caller to a pager, connecting the  
4 caller to a cellular phone or providing a busy signal, even though the intended recipient's  
5 telephone is not actually in use.

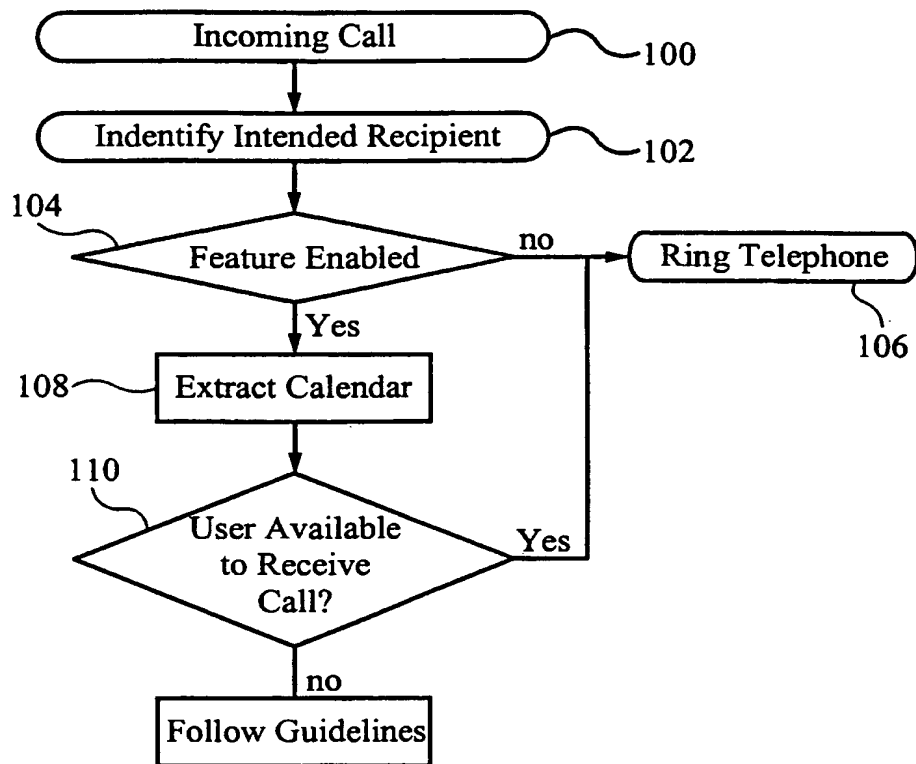
1 9. A call handling method for a user, the method comprising the steps of:  
2 a. identifying a telephone number for an other party to a telephone call;  
3 b. accessing a digital calendar database for the user; and  
4 c. modifying the digital calendar database to identify the telephone number as well  
5 as the telephone call and its duration.

1 10. The call handling method according to claim 9 further comprising accessing a database  
2 of contact information for the user and modifying the digital calendar database to identify the  
3 other party by name.

1/2

*Fig. 1*

2/2

*Fig. 2*